



# WINTER SALT

## DID YOU KNOW?

Salt is very hard on the environment. It damages vegetation, cars, and bridges. Salt contaminates waterways and gets into ground water; and can also be harmful to household pets.

### WHAT IS DE-ICING SALT & HOW DOES IT WORK?

- De-icing salt comes as a mixture of sodium chloride. Other de-icing materials include sand and agricultural by-products.
- Salt is applied to break or prevent the formation of the ice-to-pavement-bond.
- Salt is a freeze point depressant. This means that when salt is dissolved in water, it lowers the temperature at which the resulting solution will freeze. For example, sodium chloride with water creates a solution that doesn't freeze until the temperature drops below 15 degrees Fahrenheit.
- As a solution is cooled, the water component of the solution begins to freeze. Since ice can hold very little salt, the salt that is present is confined to the remaining liquid phase.
- At this point, there is a mixture of ice/snow and concentrated brine, which appears as slush on the pavement.
- When we place dry salt onto a pavement surface, we want the salt to dissolve and form a solution of salt and water, which is called brine. It is this brine that in fact melts the frost, snow or ice. Our goal is to create a layer of brine at the pavement surface to prevent the snow pack or ice from bonding to the pavement.

### TIPS TO REDUCE ROCK SALT USAGE:

- Shoveling snow by hand before it gets trampled is the best alternative to rock salt because it introduces no additional chemicals and it is also a good source of exercise. Thirty minutes of snow shoveling burns approximately 300 calories or the equivalent of a cheeseburger from a popular hamburger chain.
- If you are unable to keep up with the snow by shoveling, buy a snow blower or hire a snow removal service.
- Mix salt with an environmentally friendly abrasive material, like sand to minimize salt usage and provide extra traction in problem areas.
- By spreading an anti-icer before a storm hits, you can prevent the formation of the pavement-ice bond. This makes it easier to shovel off later as well eliminates the need to de-ice after the bond has already been made.

### Typical Road Treatment Materials used during Snow and Ice operations:

Common Chemicals	Use	Advantages	Disadvantages
Rock Salt (Sodium Chloride-*NaCl)	Chemical used to either break the bond of ice to the pavement or used to prevent it from forming by lowering the freezing point of water.	Inexpensive. Very effective. Readily available.	Impact on the environment. Corrosive. Doesn't work at low temperatures.
Sand	Used only in Reduced Salt Zones and at very low temperatures when Rock Salt will not work effectively.	Inexpensive. Works at low temperatures. Available.	Impact on the environment. Does not melt snow and ice. Clogs drainage structures. Expensive to sweep and dispose of.
Agricultural by-products (from processing beets and corn or byproducts from beer brewing)	Works at very low temperatures. (-20 degrees F.)	Reduces the corrosiveness of chlorides when added to them. Reduces amount of de-icing salt needed. Biodegradable (before mixed w/de-icers).	About 3 times more expensive than *NaCl. Some blends may have a high BOD & don't work on their own but must be added to other de-icers. Depending on product may contain high phosphates.

Please visit Fond du Lac County Urban Storm Water Management website for more information.

<http://www.fdlco.wi.gov/Index.aspx?page=1094>

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